

## **Abstract**

The present invention relates to methods for identifying and/or detecting T-cell epitopes of a protein antigen, to methods for preparing peptide vaccines against a protein antigen, to methods for controlling the quality of receptor/ligand complexes and/or their components, to methods for preparing nanoparticles having at least one immobilized receptor unit or an immobilized receptor, to methods for preparing nanoparticles having immobilized receptor/ligand complexes, in particular peptide-presenting MHC molecules, to methods for enriching and/or isolating specific CD4<sup>+</sup>-T- or CD8<sup>+</sup>-T-lymphocytes from peripheral blood mononuclear cells, to methods for priming a CD8<sup>+</sup>-T-lymphocyte reaction in vitro, to nanoparticles having an immobilized receptor unit, in particular an immobilized chain of an MHC molecule, to nanoparticles having an immobilized receptor, in particular an immobilized MHC molecule, to nanoparticles having an immobilized receptor/ligand complex, in particular a peptide-presenting MHC molecule, to a peptide vaccine, to a kit for identifying and/or detecting T-cell epitopes of a protein antigen, and to the use of the nanoparticles for identifying and/or detecting T-cell epitopes, for preparing peptide vaccines, for enriching and/or isolating specific T-lymphocytes and for priming a CD8<sup>+</sup>-T-lymphocyte reaction in vitro.